

FIG. 1A

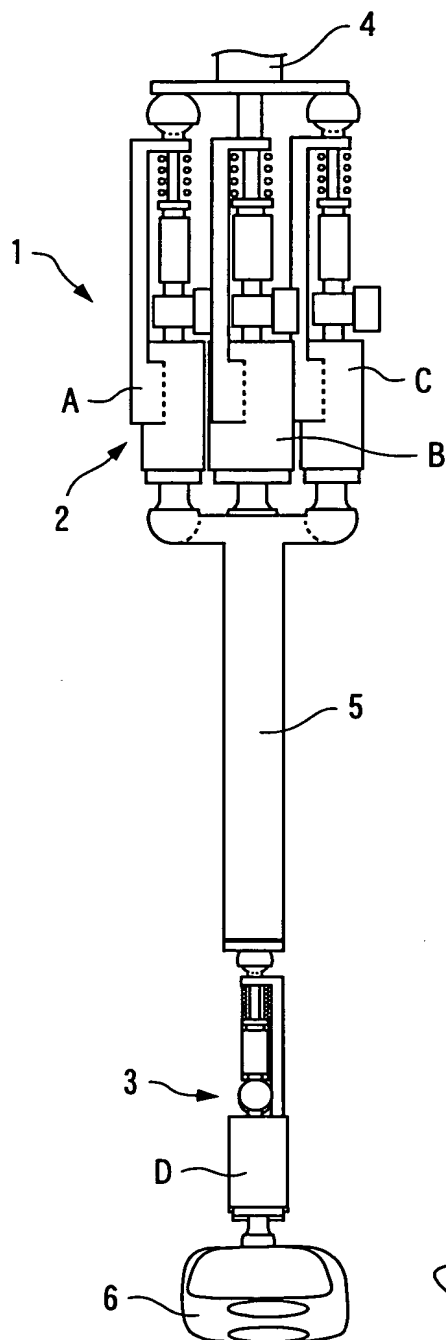
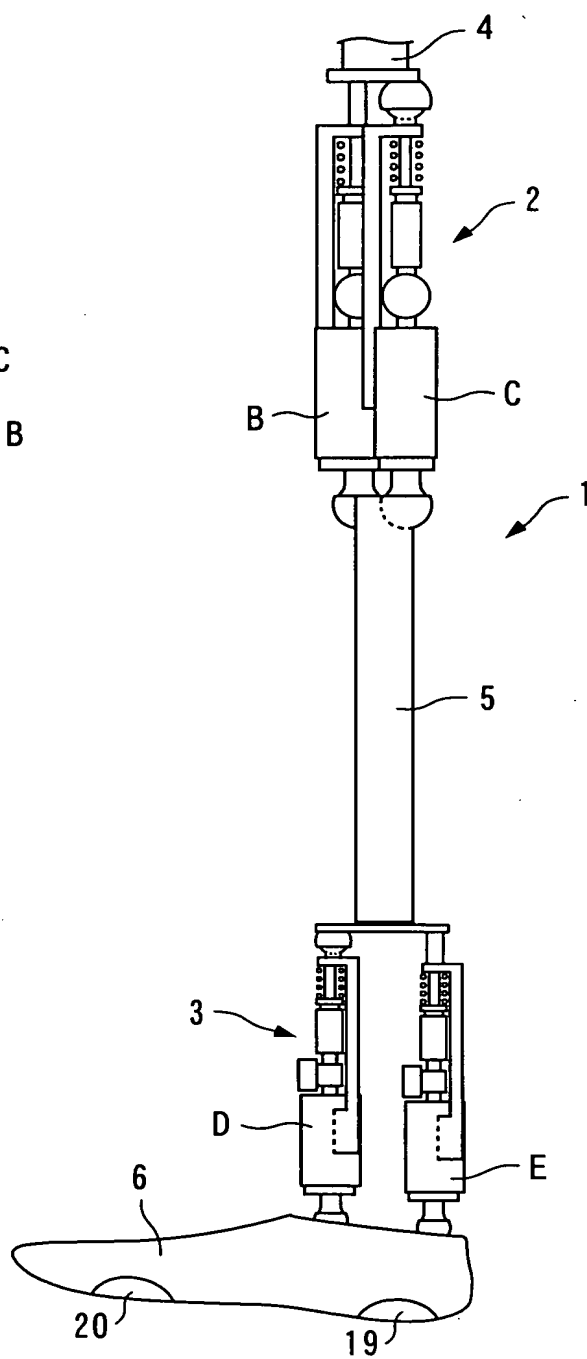


FIG. 1B



F I G . 2 A

F I G . 2 B

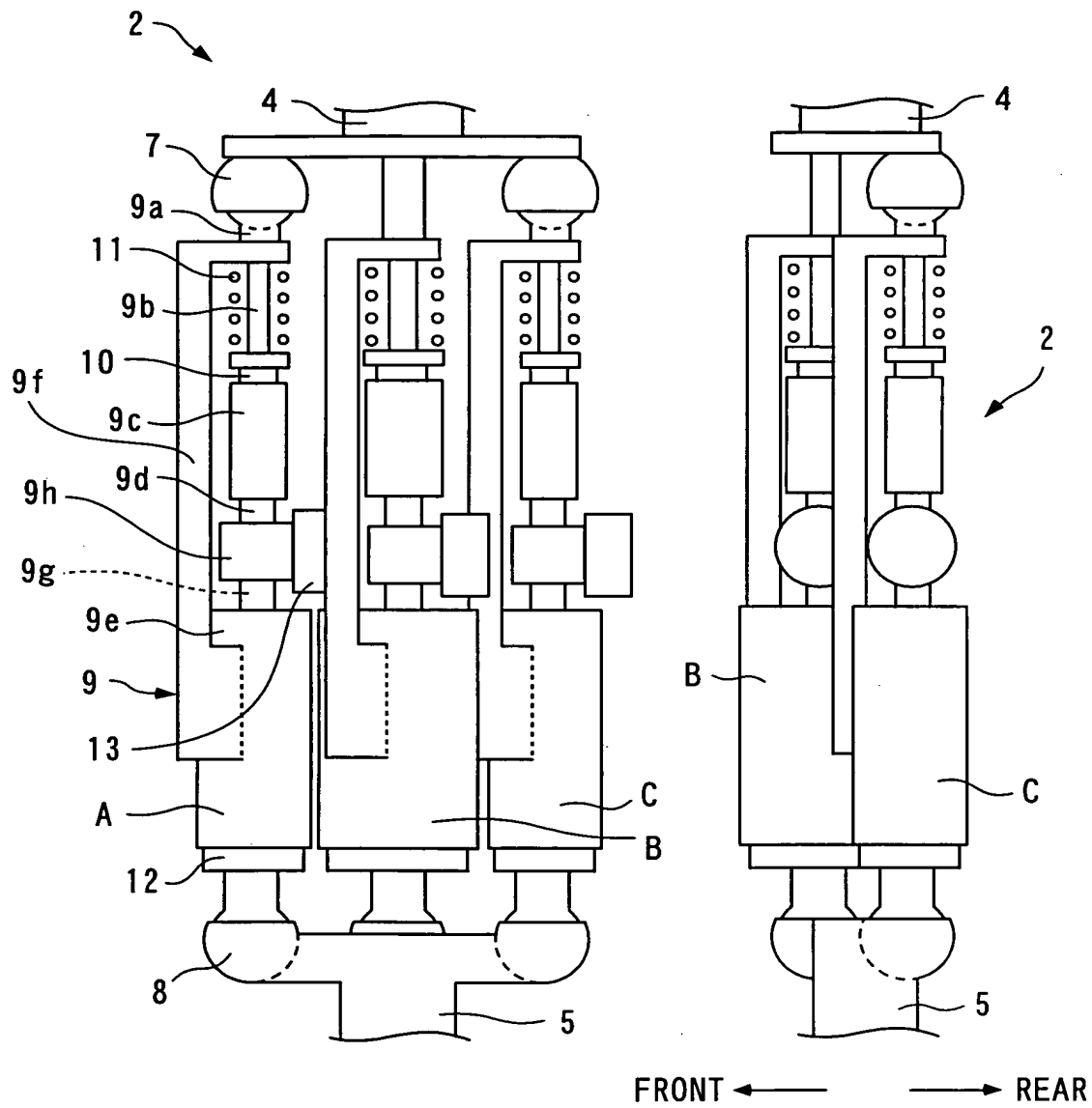


FIG. 3

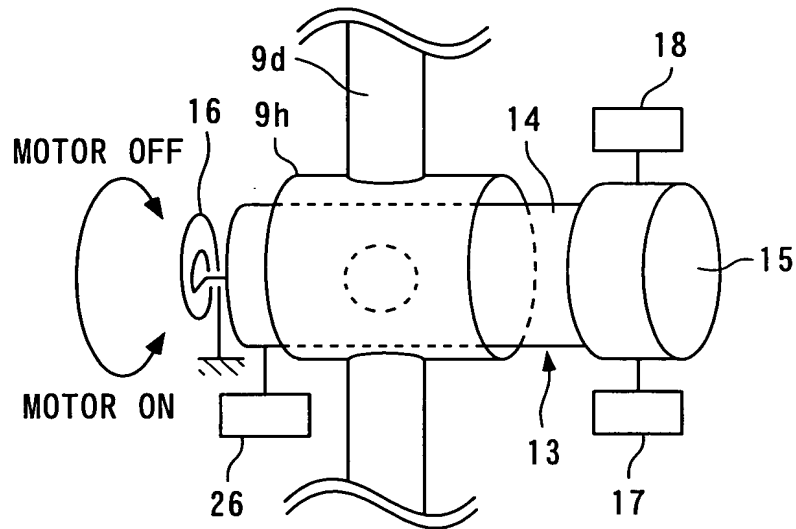


FIG. 4 A

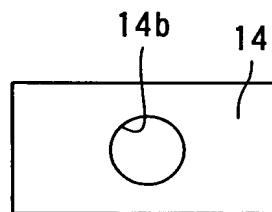


FIG. 4 B

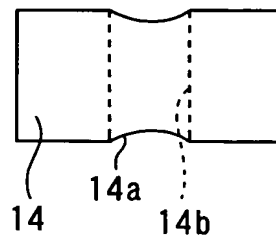


FIG. 4 C

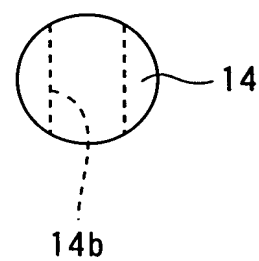


FIG. 5A  
FULLY CLOSED

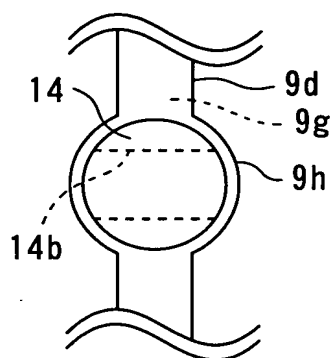


FIG. 5B  
FULLY OPEN

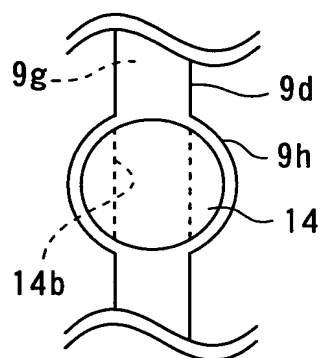


FIG. 5C  
PARTIALLY OPEN

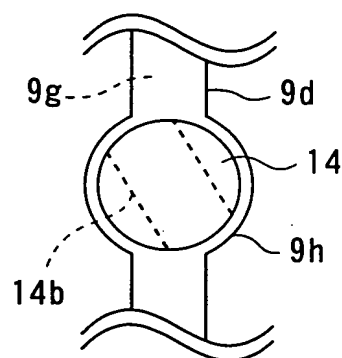


FIG. 6 A  
AT NORMAL TIME

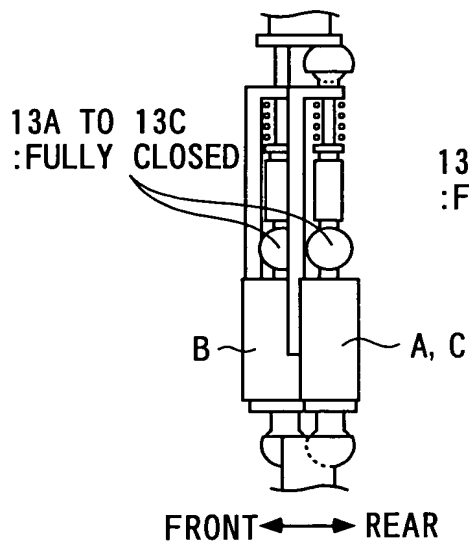


FIG. 6 B  
DURING WEIGHT  
APPLICATION

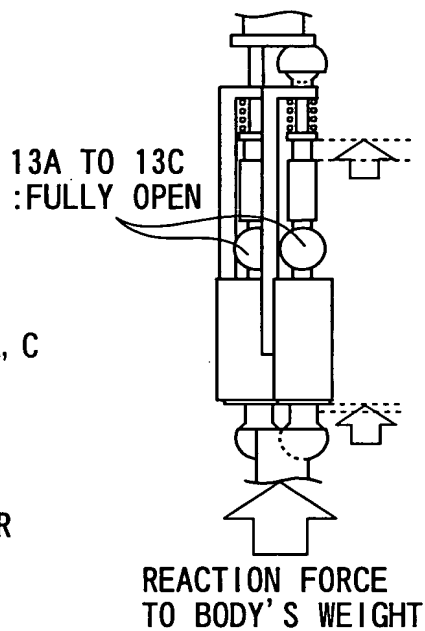


FIG. 6 C  
DURING PRESSURE  
MAINTAINING TIME

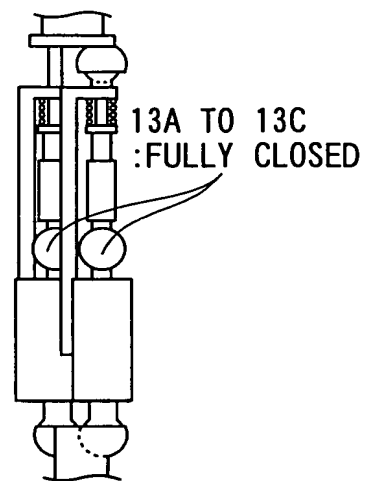


FIG. 6 D  
DURING BACKWARD ROTATION  
OF UNDER-KNEE MEMBER  
(KNEE BENDING MOTION)

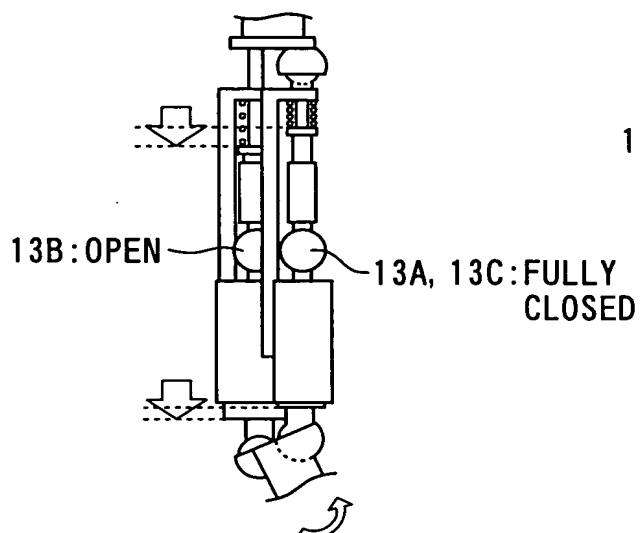
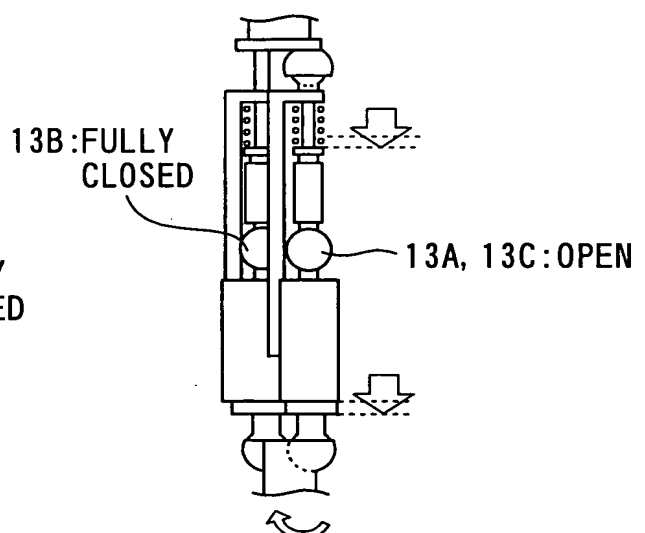
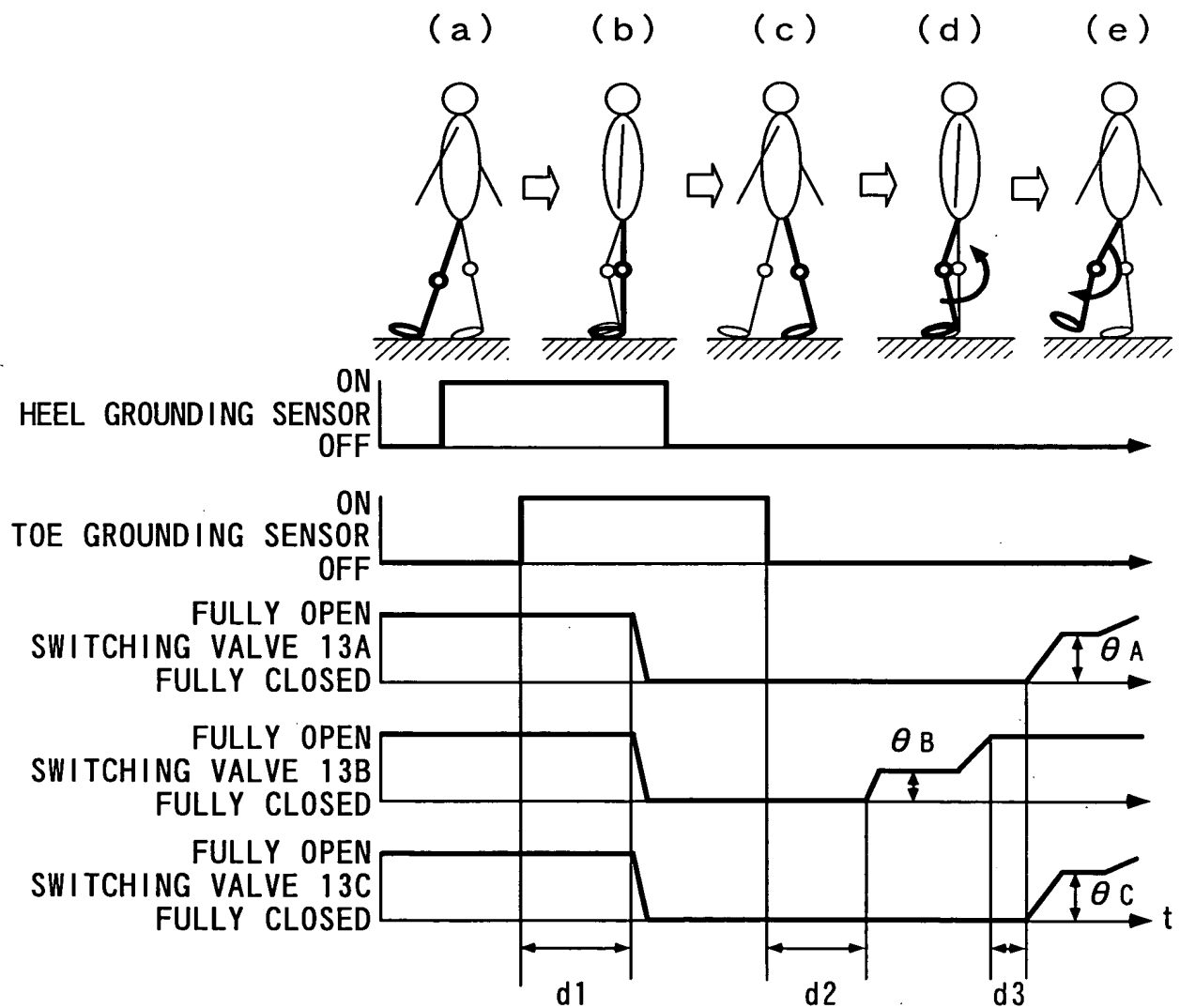


FIG. 6 E  
DURING FORWARD ROTATION  
OF UNDER-KNEE MEMBER  
(KNEE STRETCHING MOTION)

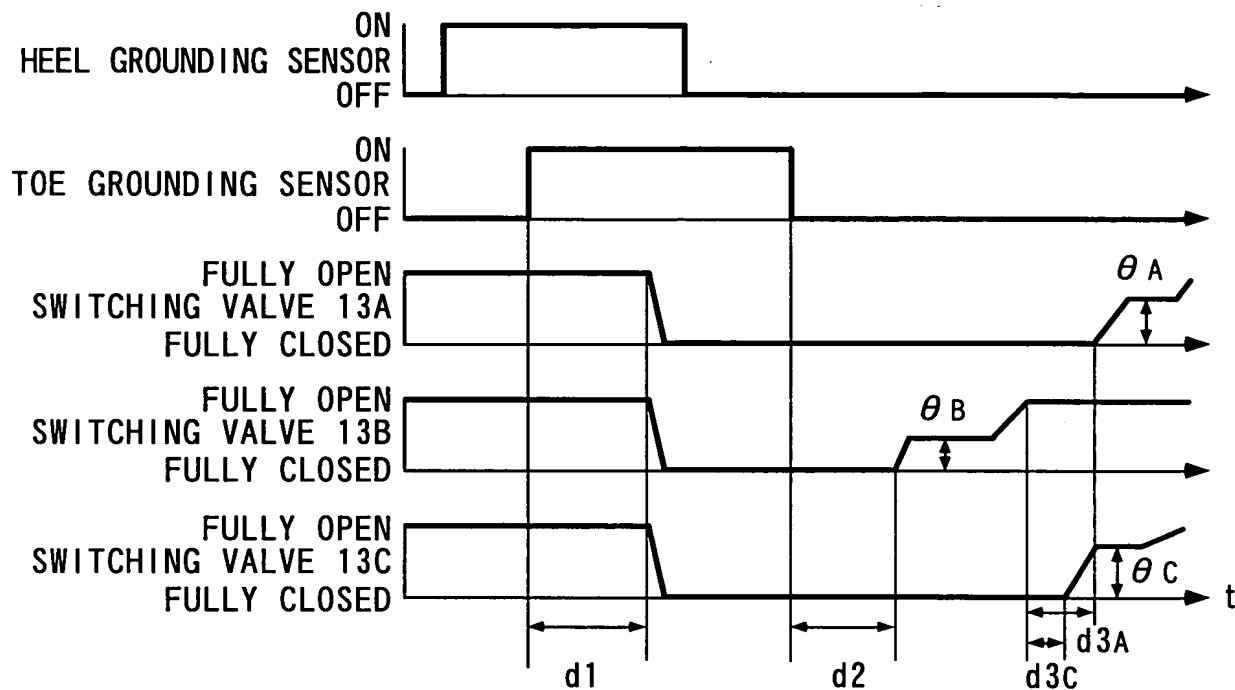


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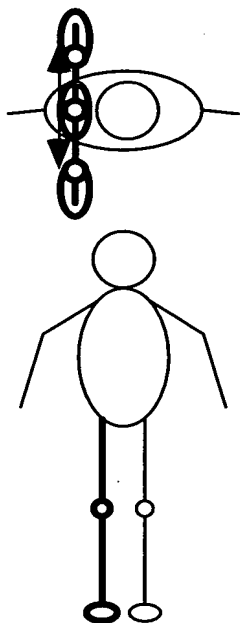
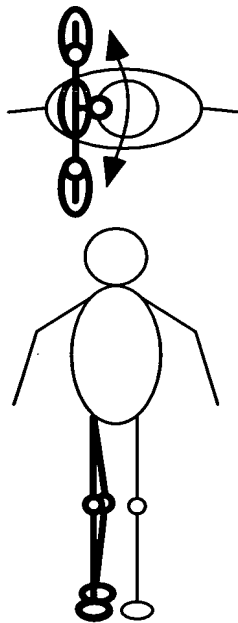
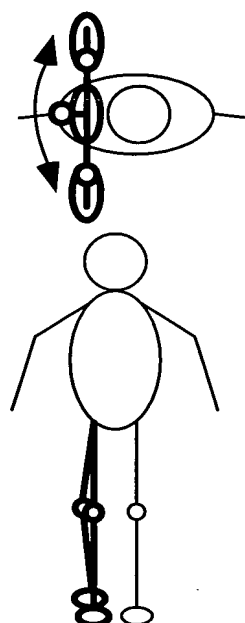
F I G . 7



F I G. 8



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FIG. 9 A  
NORMAL LEGFIG. 9 B  
KNOCK-KNEE LEGFIG. 9 C  
BOWLEG



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FIG. 10A

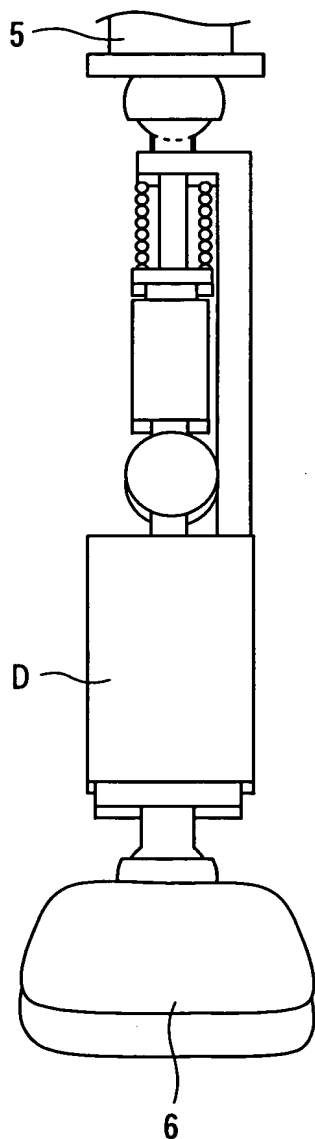


FIG. 10B

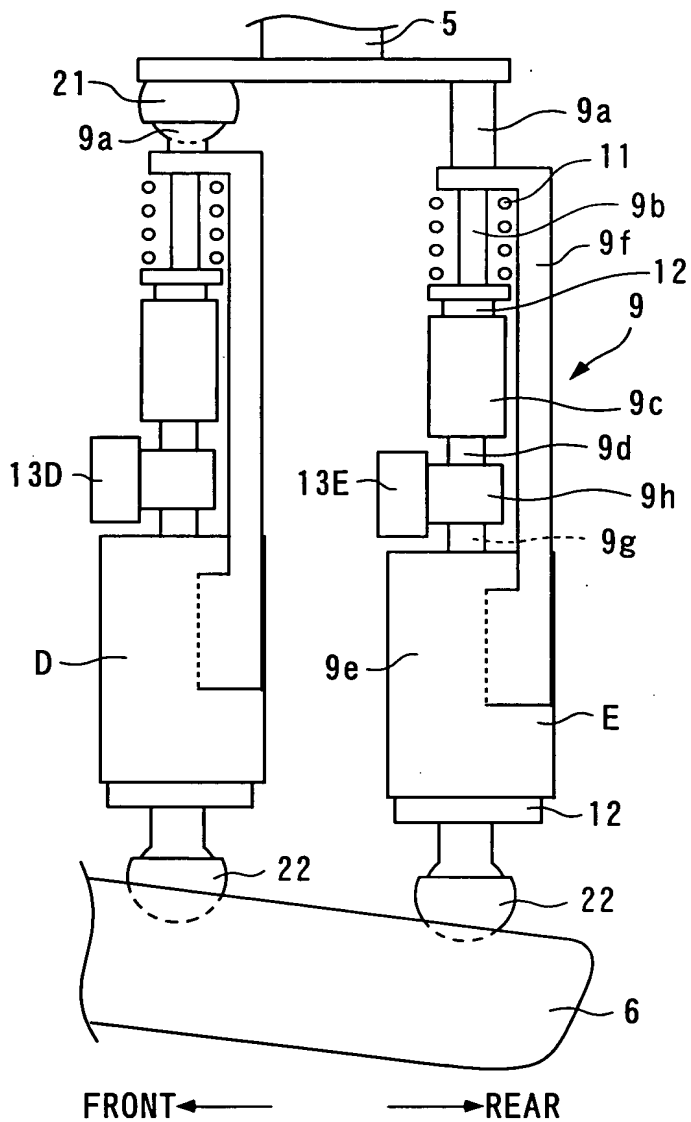


FIG. 11A

AT NORMAL TIME

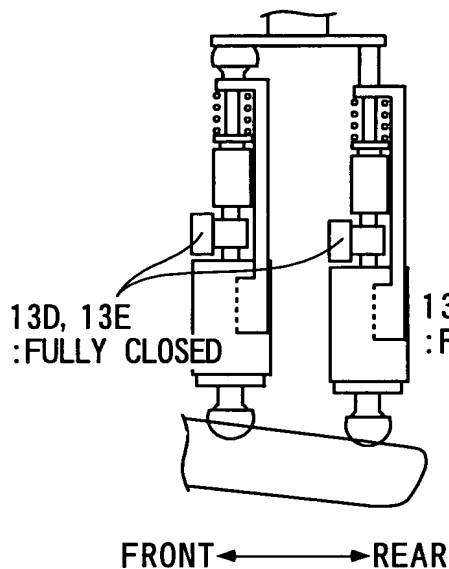


FIG. 11B

DURING WEIGHT APPLICATION

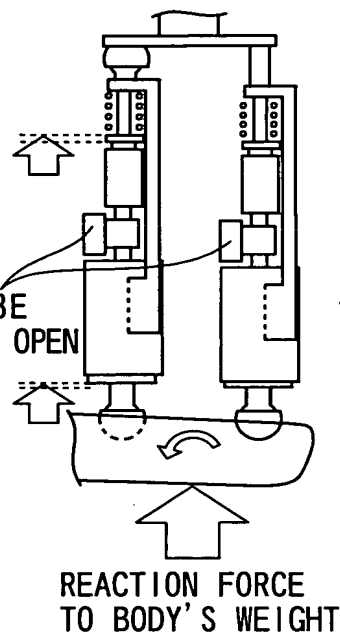


FIG. 11C

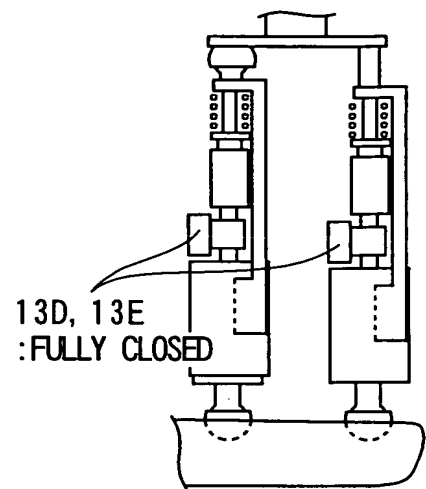
DURING PRESSURE  
MAINTAINING TIME

FIG. 11D

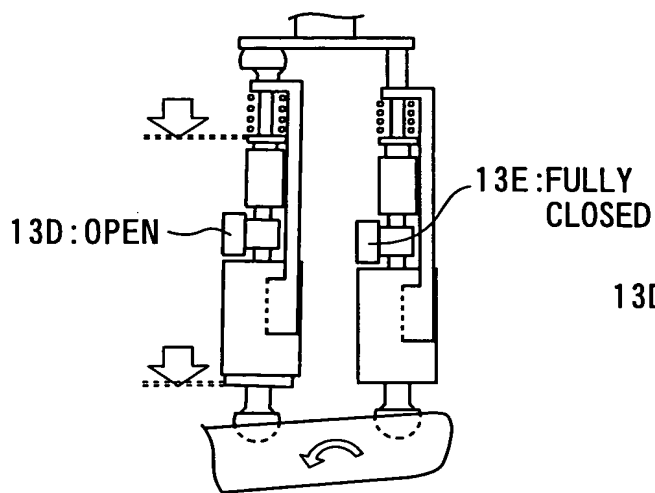
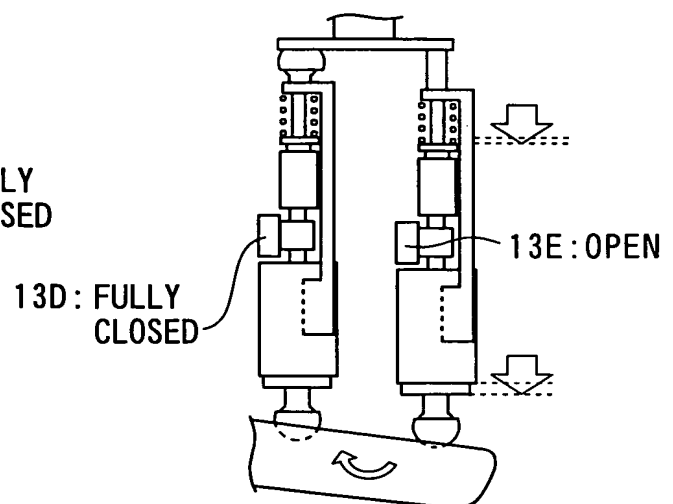
DURING DOWNWARD ROTATION  
OF FOOT MEMBER  
(KICKING MOTION)

FIG. 11E

DURING UPWARD ROTATION  
OF FOOT MEMBER  
(TOE-UP MOTION)

F I G. 1 2

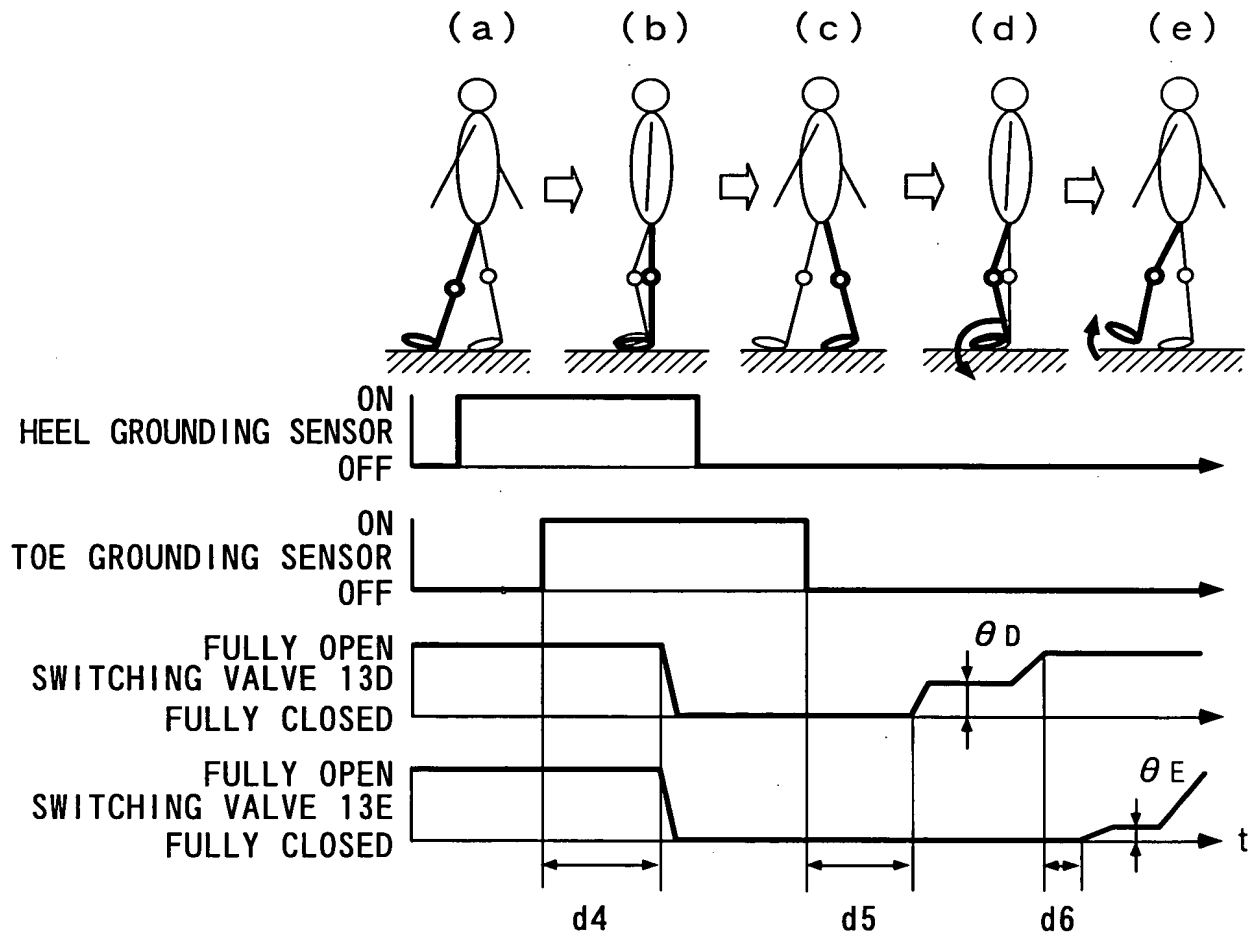
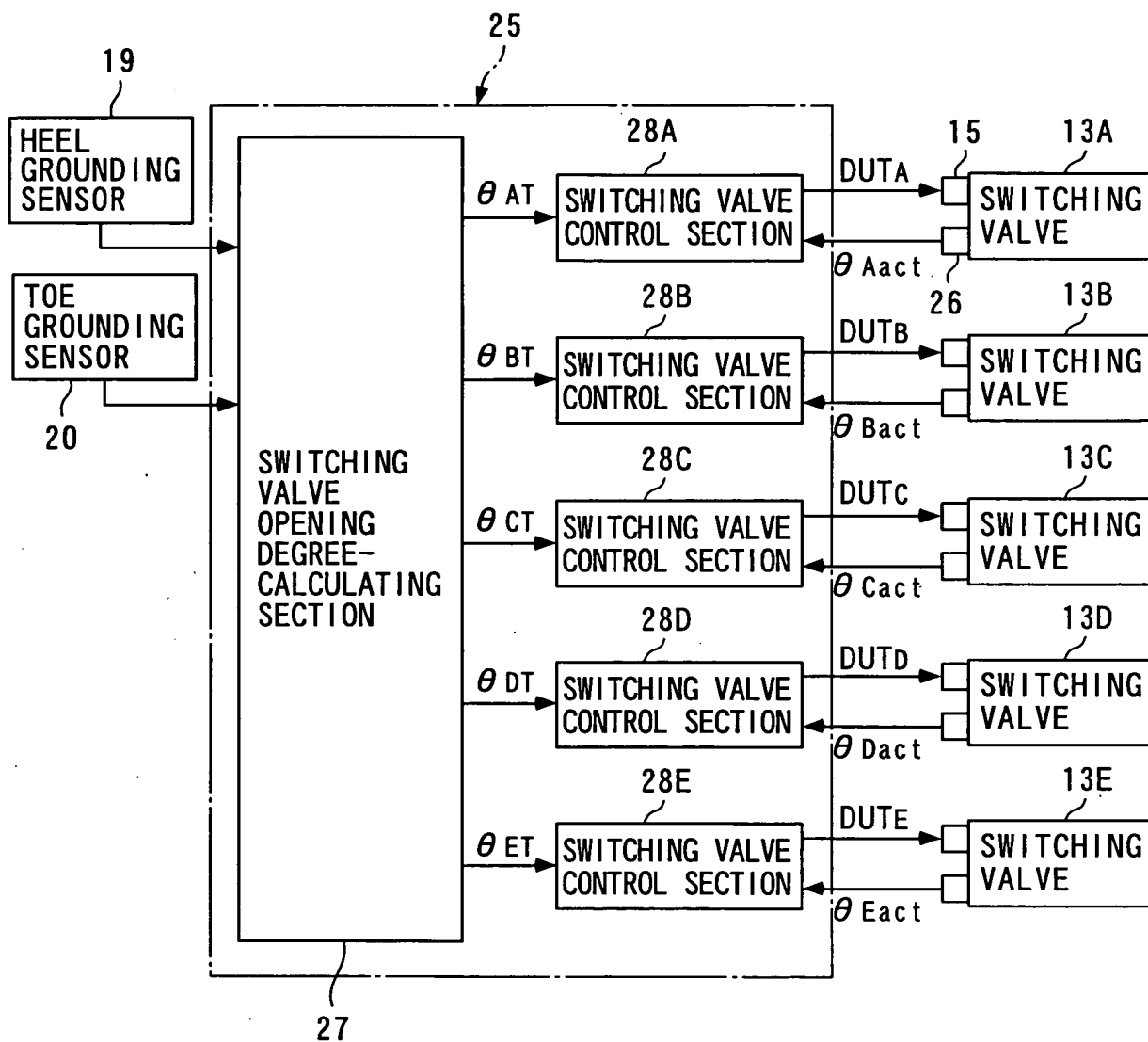


FIG. 13



F I G. 1 4

RESPONSE-SPECIFYING CONTROL ALGORITHM

$$\begin{aligned} DUT(k) = & -Krch \sigma(k) - Kadp \sum_{i=0}^k \sigma(i) \\ & - Keq \theta_{act}(k) - Keqr \theta T(k) \end{aligned} \quad (3-1)$$

$$\sigma(k) = e(k) - Se(k-1) \quad (3-2)$$

$$e(k) = \theta_{act}(k) - \theta T(k) \quad (3-3)$$

F I G. 1 5

2 DEGREE-OF-FREEDOM CONTROL ALGORITHM

$$\begin{aligned} DUT(k) = & -Kp \theta_{act}(k) + Kpr \theta T(k) \\ & - Kd \dot{\theta}_{act} + Kdr \dot{\theta} T(k) \\ & - Ki \sum_{i=0}^k e(i) \end{aligned} \quad (3-4)$$

$$e(k) = \theta_{act}(k) - \theta T(k)$$

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FIG. 16

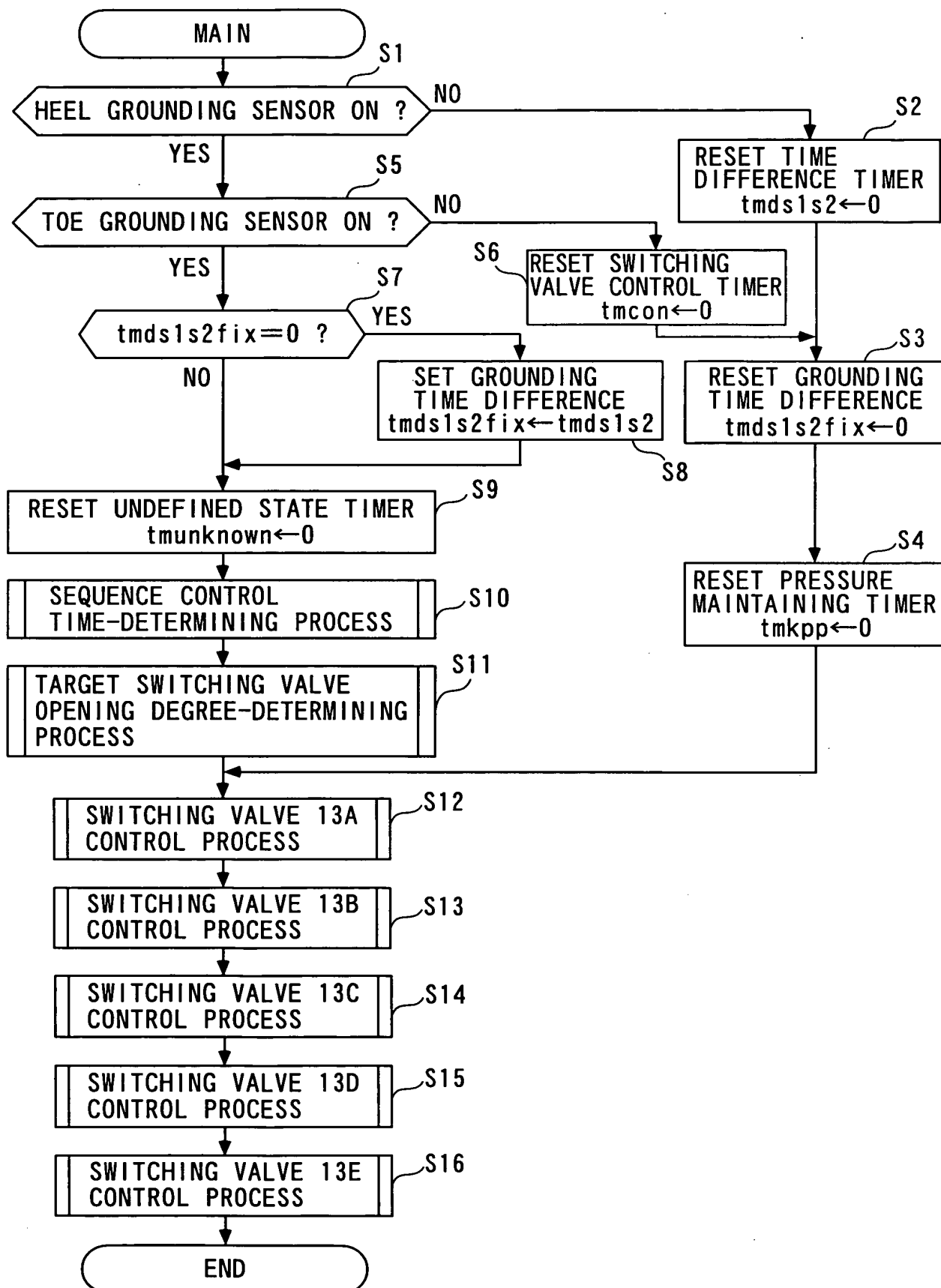
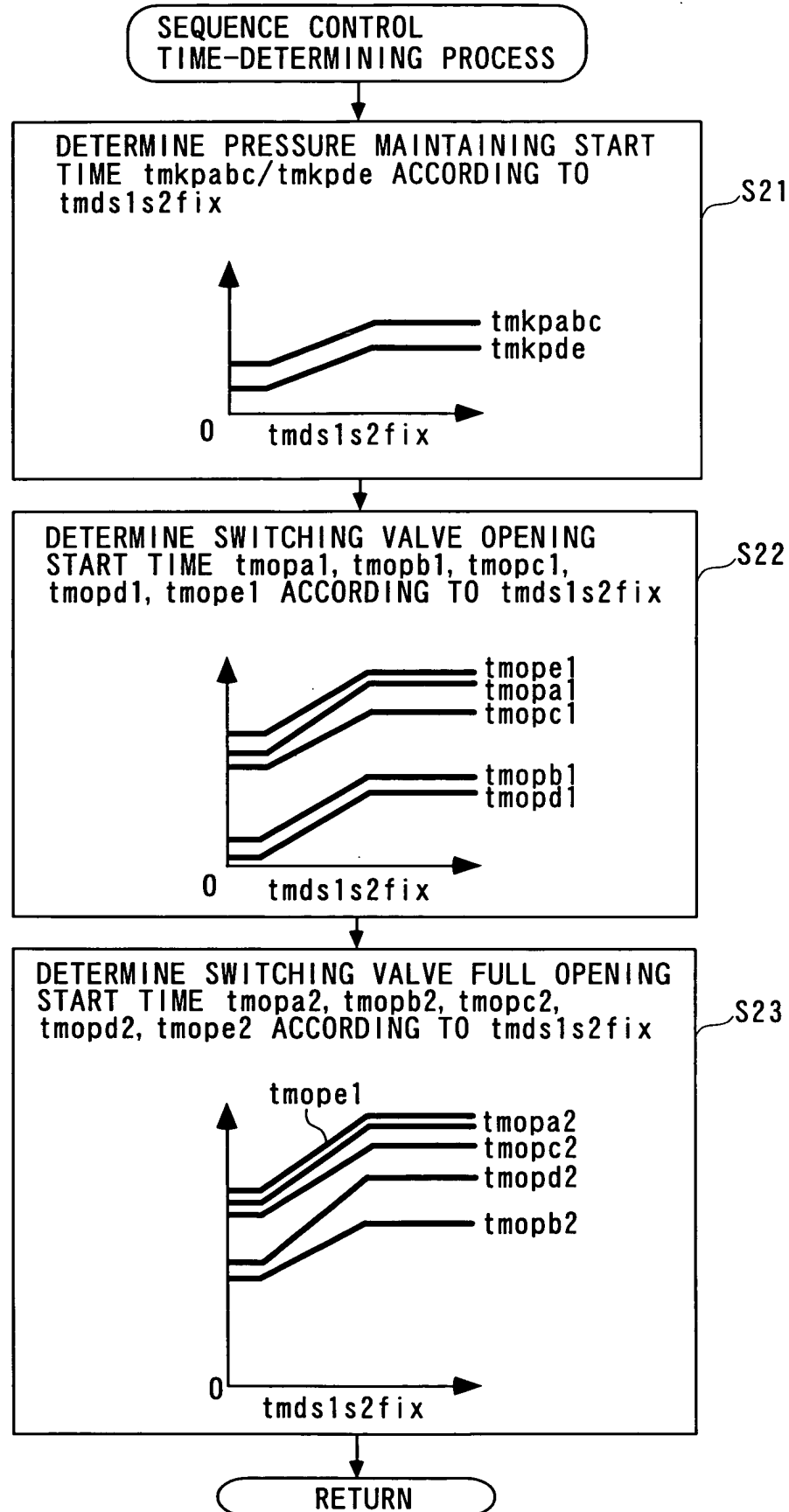
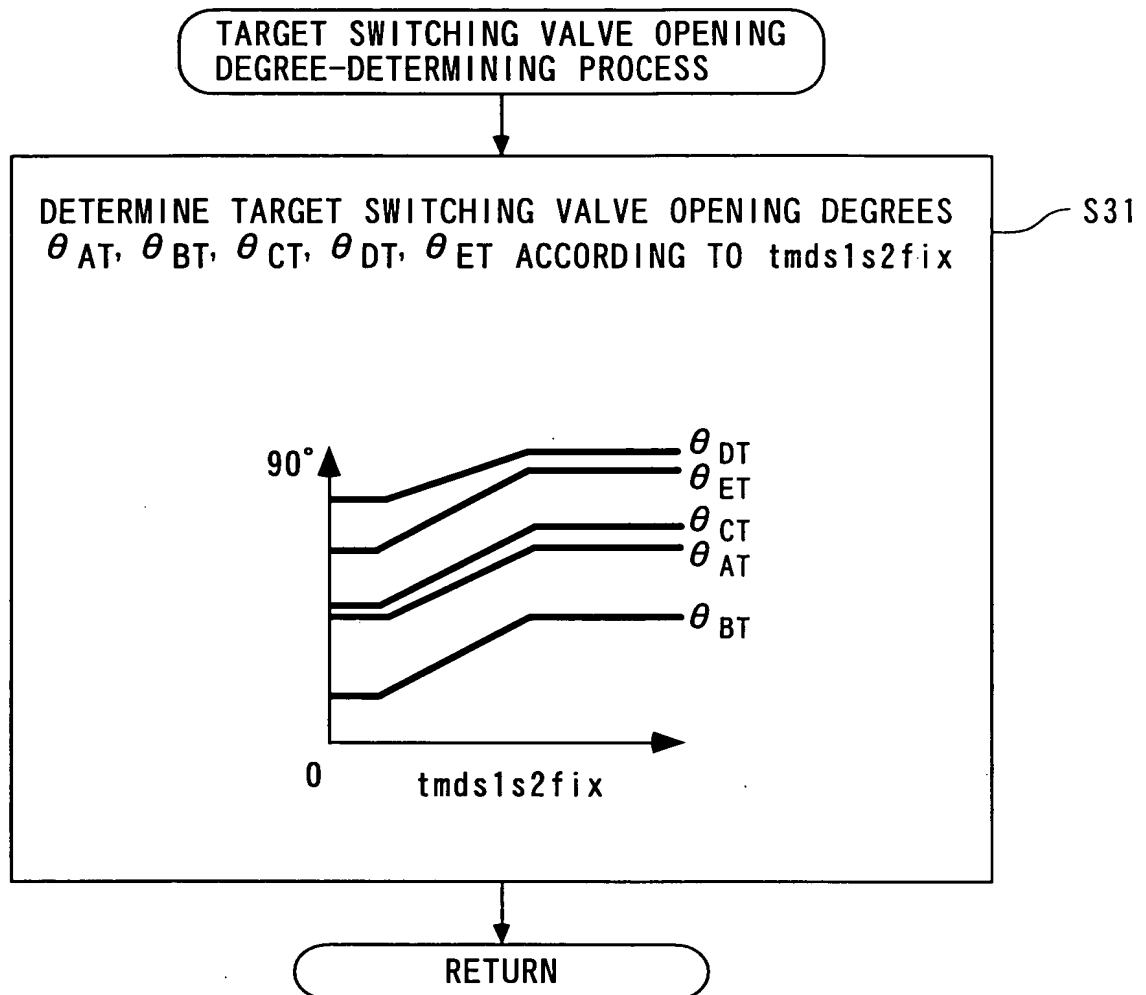


FIG. 17



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F I G. 1 8





F I G . 1 9

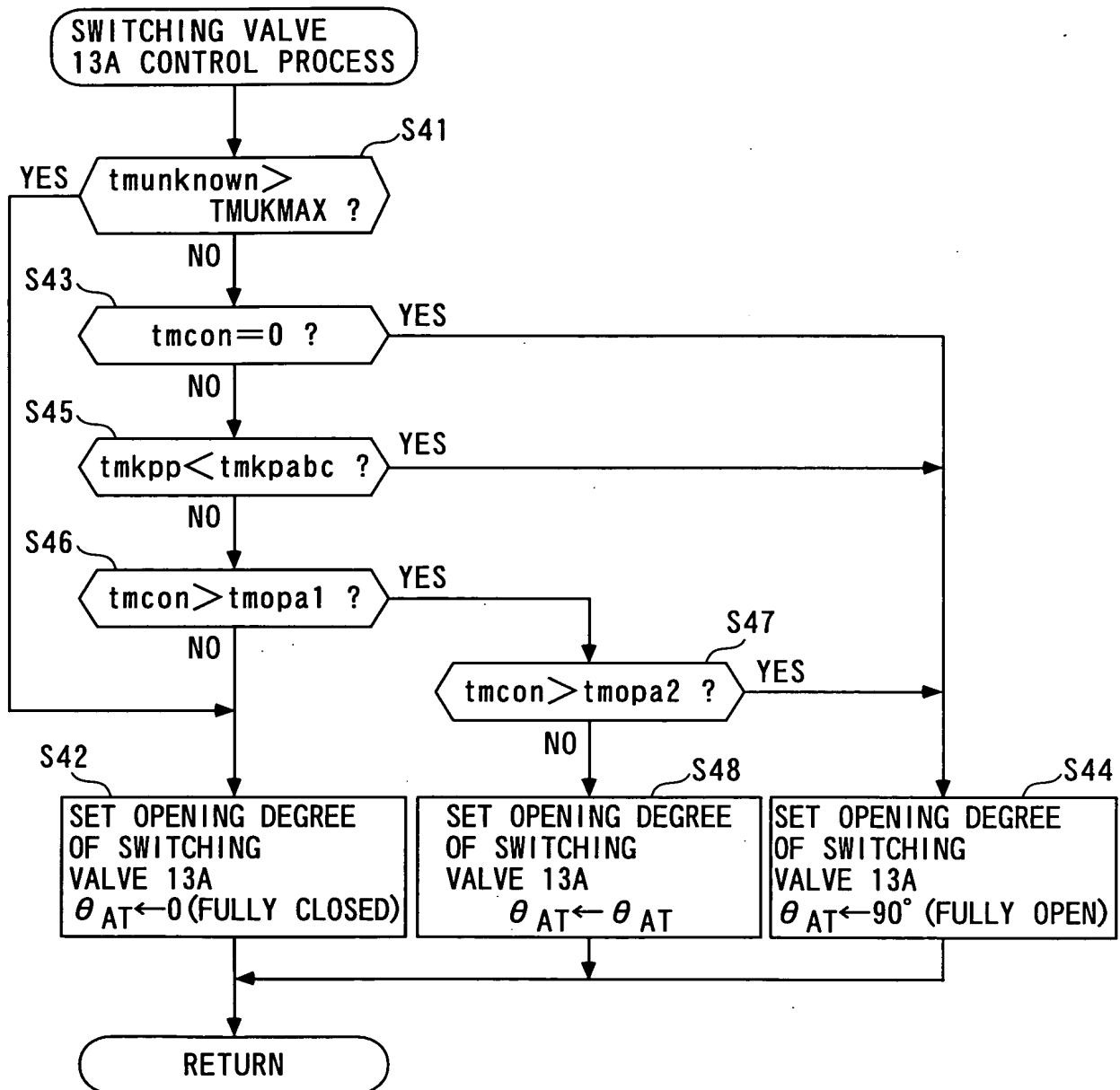
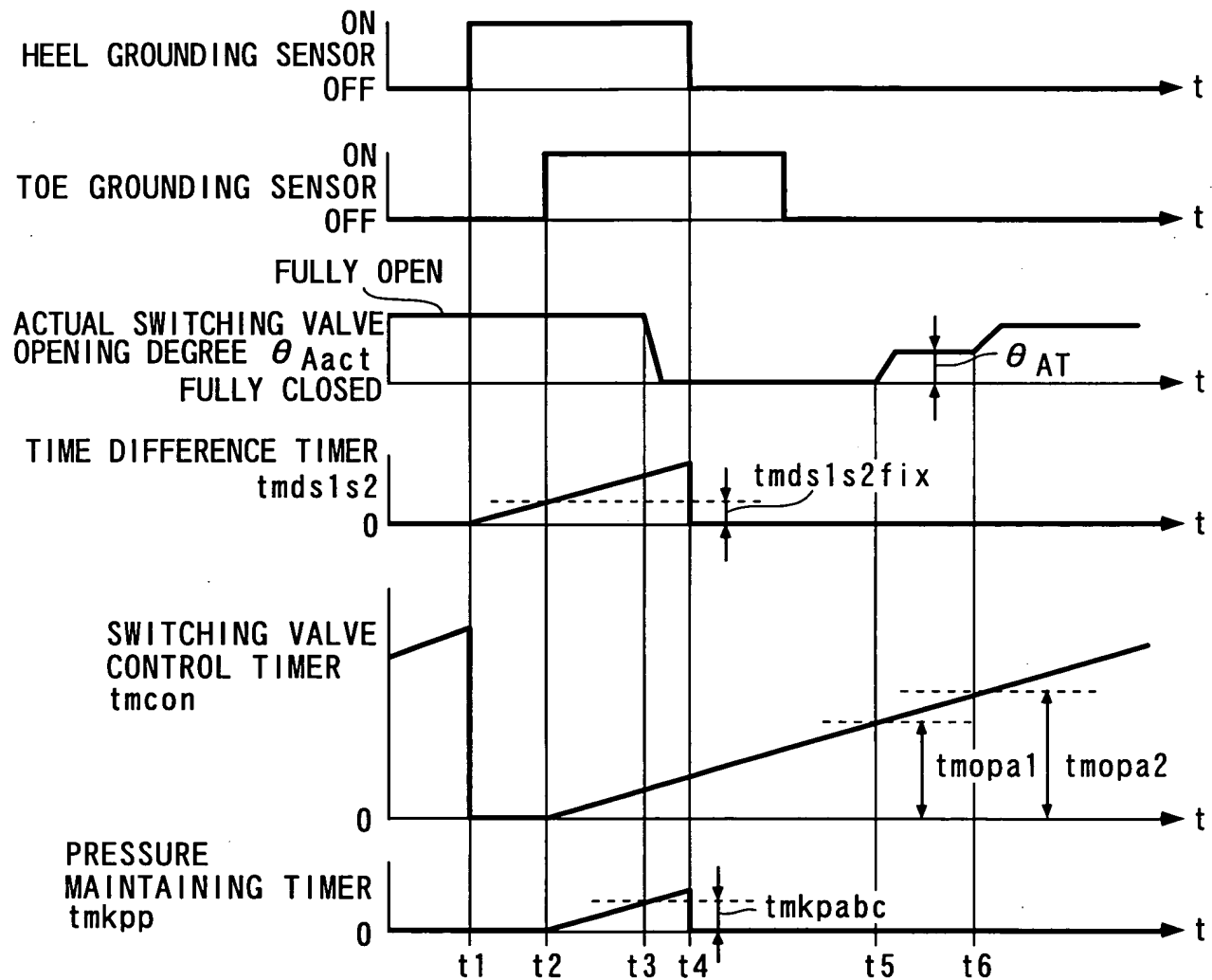
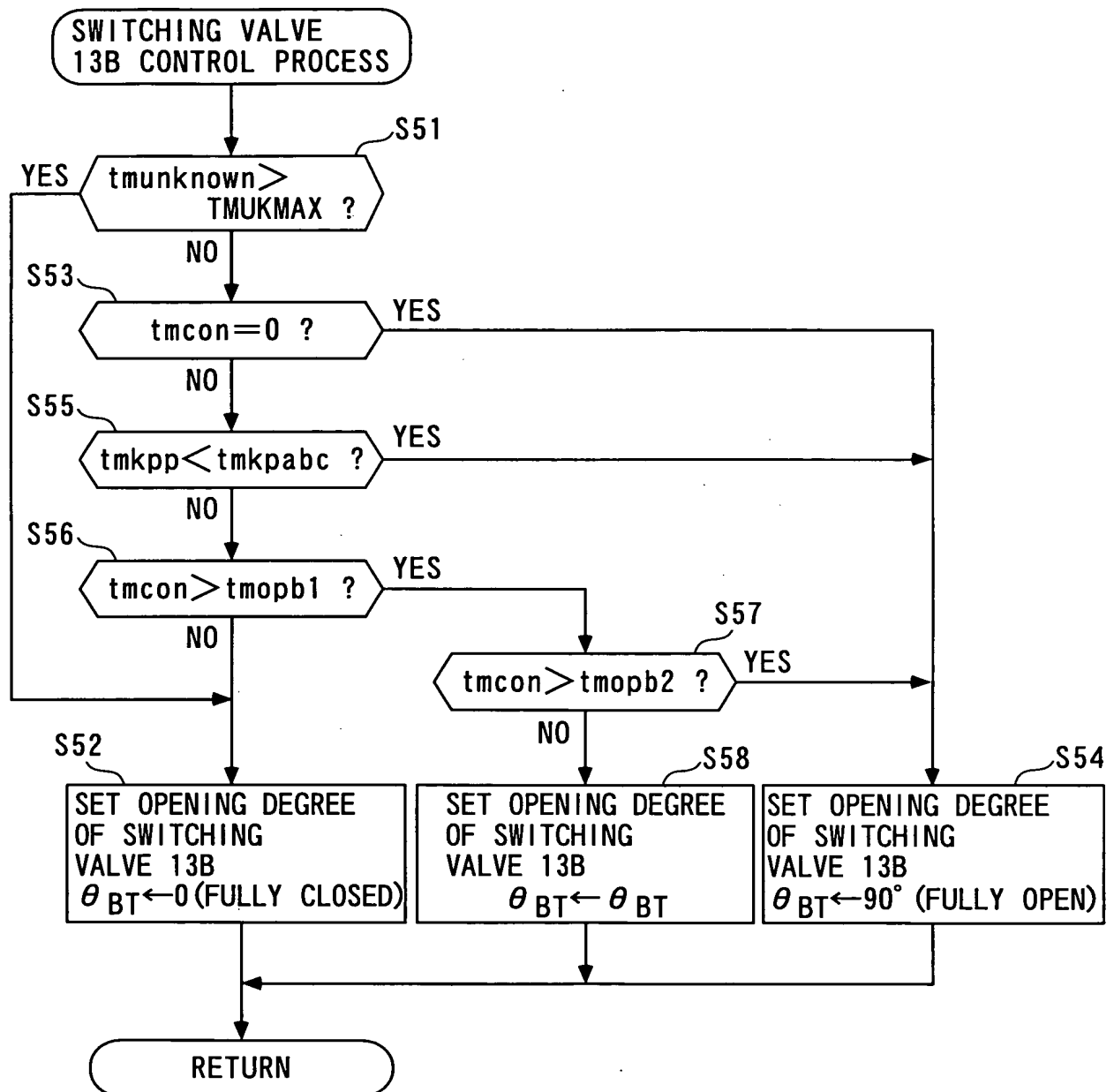


FIG. 20



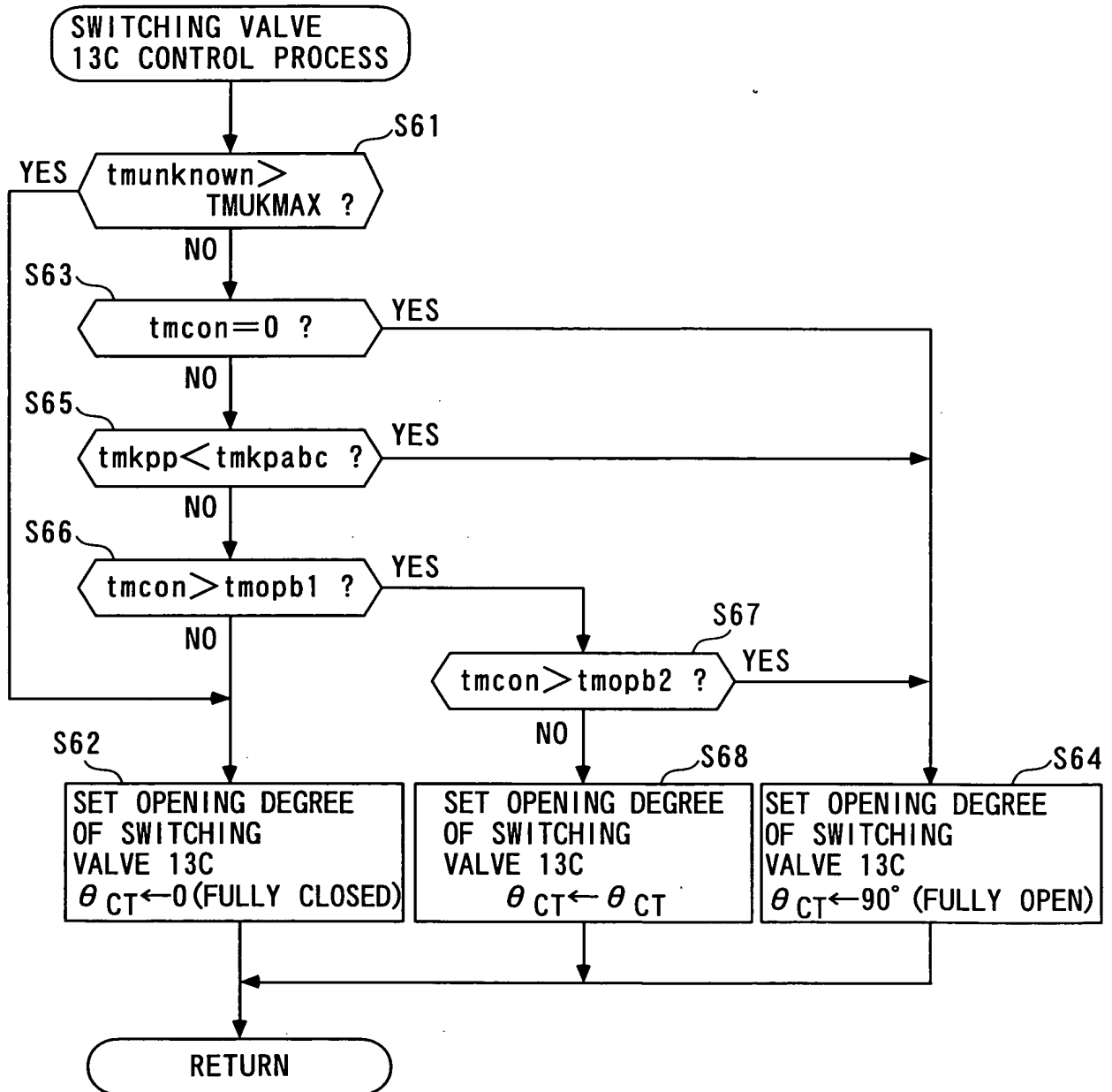
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F I G. 2 1



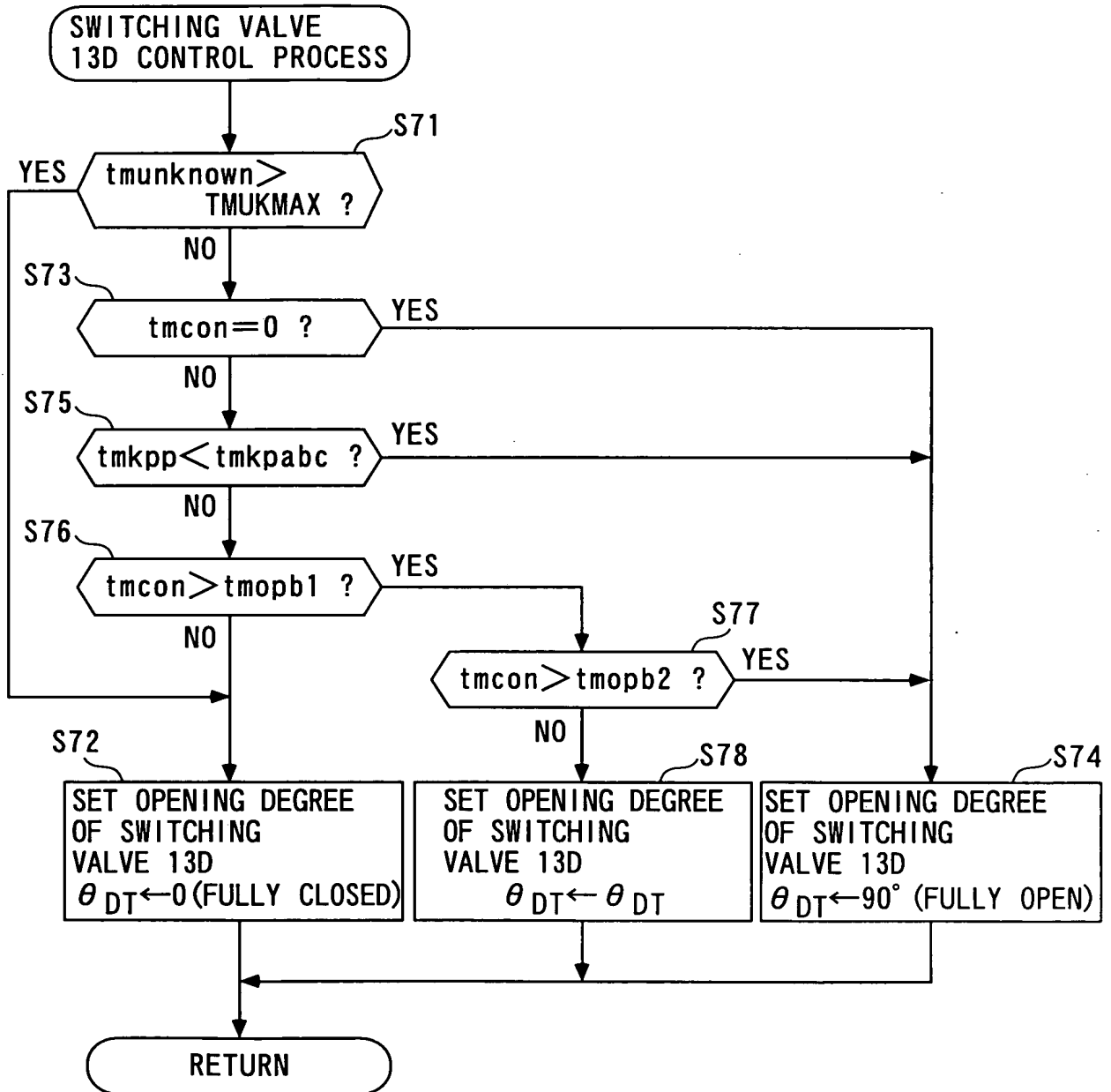
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F I G. 2 2



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F I G. 2 3



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F I G . 2 4

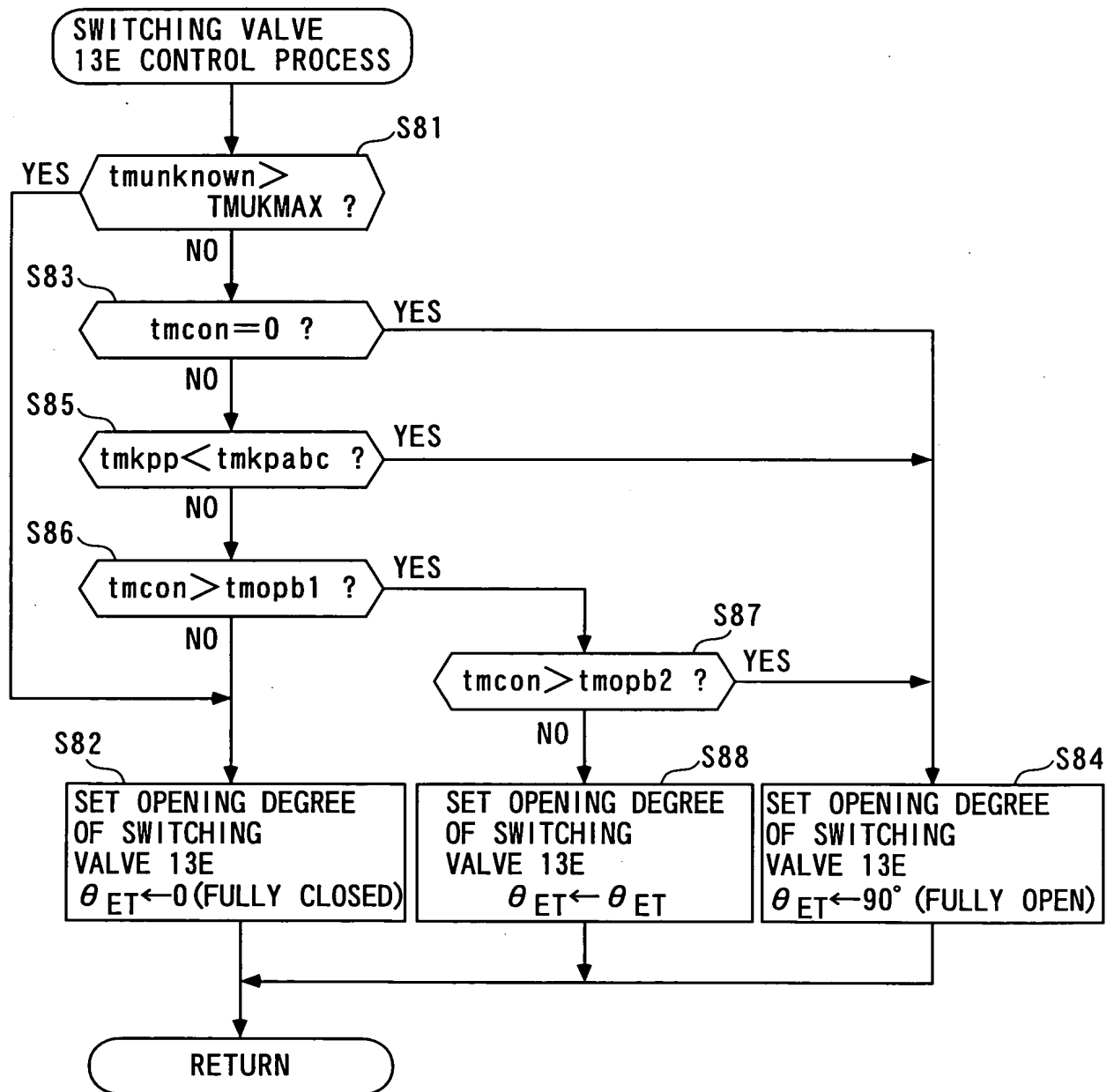


FIG. 25A

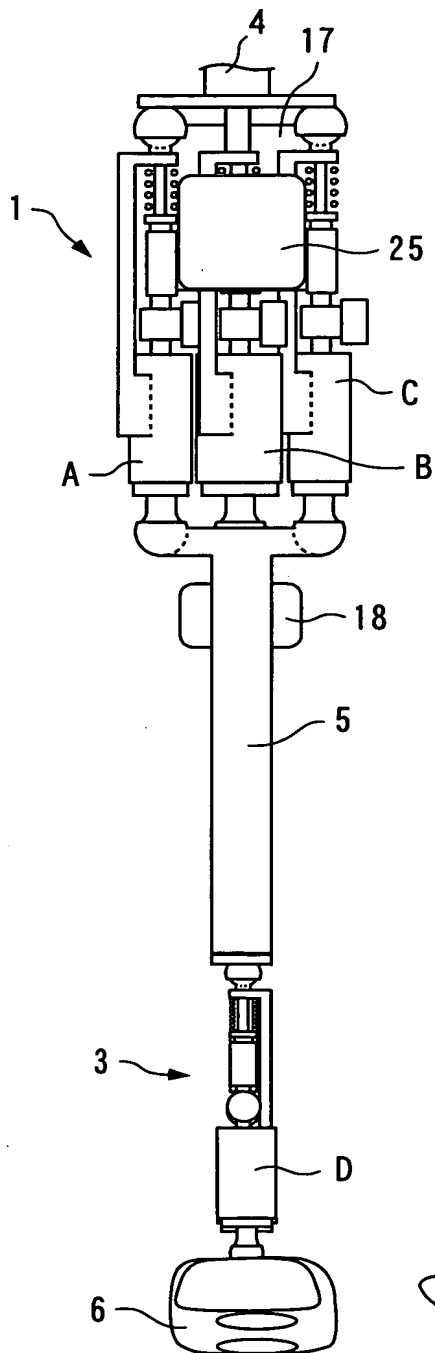
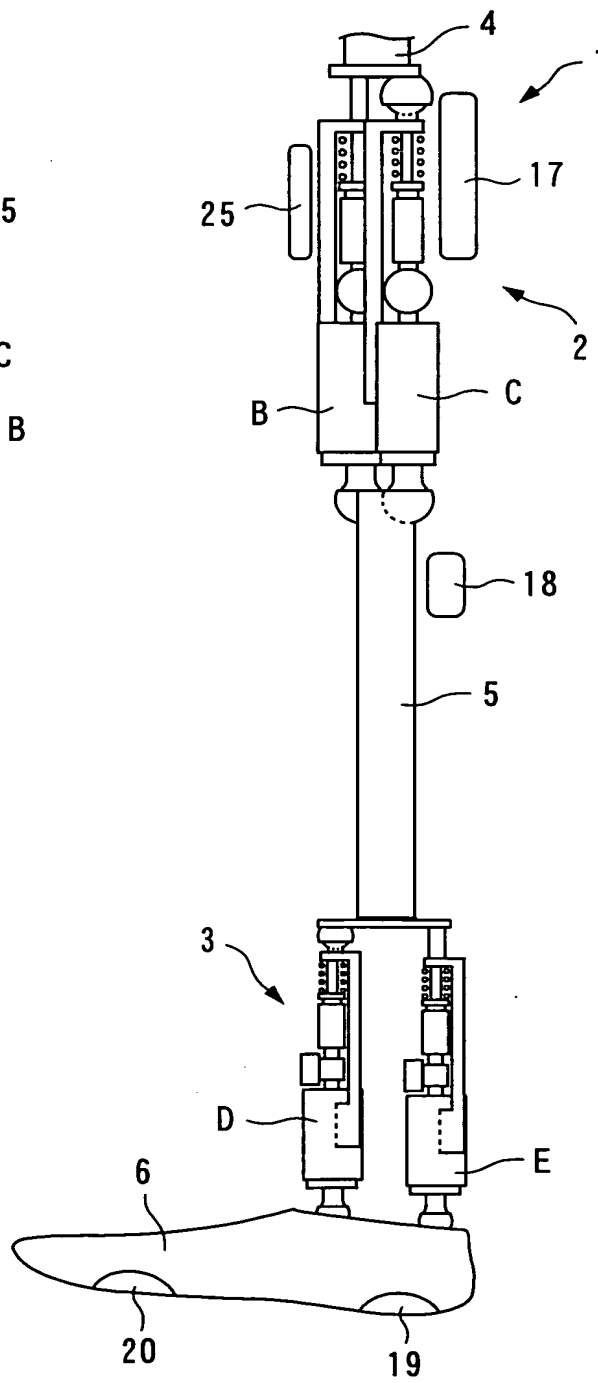
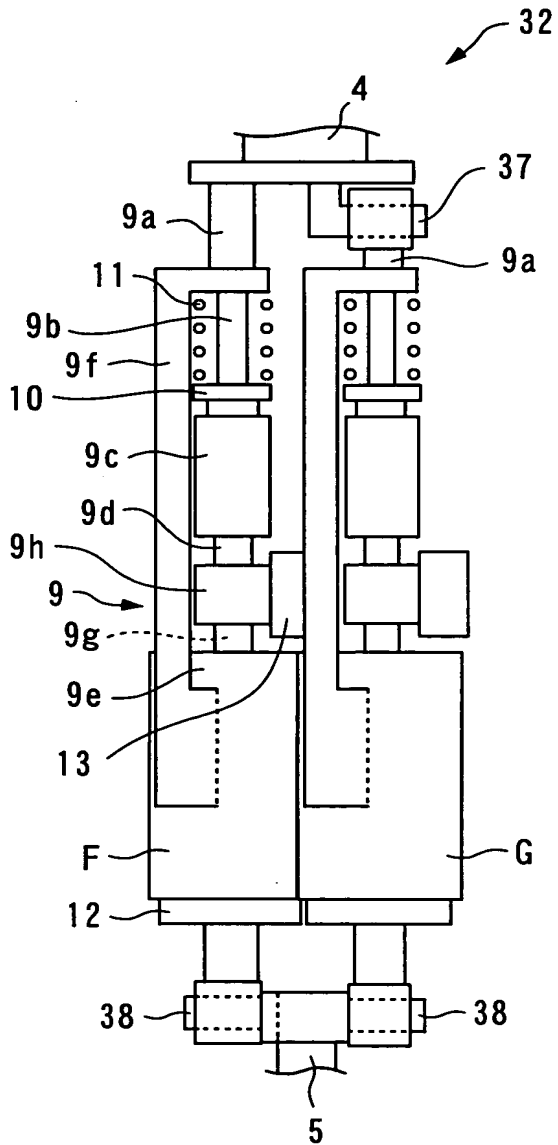


FIG. 25B

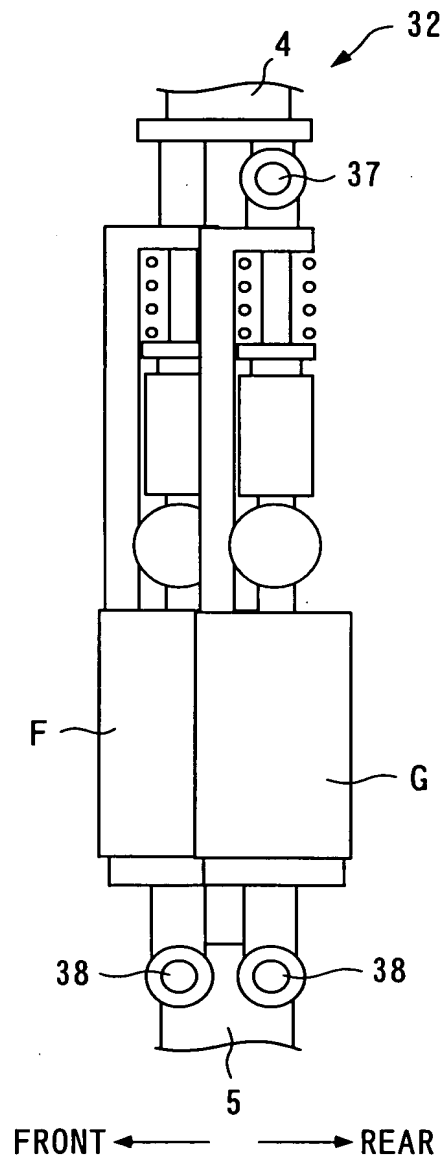


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F I G . 2 6 A



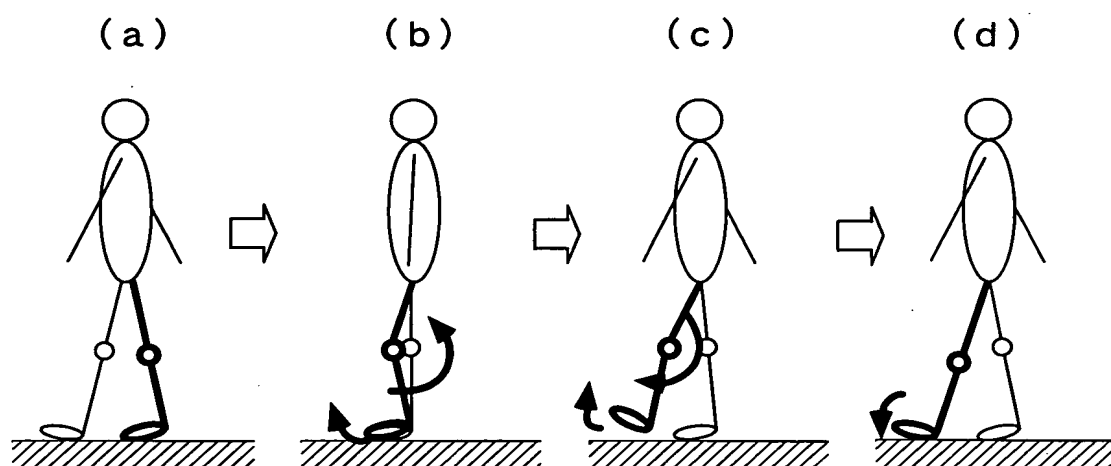
F I G . 2 6 B





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F I G. 2 7



F I G. 2 8

